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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/535,154	03/24/2000	Eric Metois	SOL-148	1884

7590 06/01/2004
Barry R Lipsitz
Law Offices Of Barry R Lipsitz
755 Main Street Building 8
Monroe, CT 06468

EXAMINER

AKPATI, ODAICHE T

ART UNIT	PAPER NUMBER
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2135

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DATE MAILED: 06/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/535,154

Applicant(s)

METOIS ET AL.

Examiner

Tracey Akpati

Art Unit

2135

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 March 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 08.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-23 are pending. None of the claims have been amended. The attorney argues on the existing claims. These arguments are rebutted as shown below. This action is non-final.

2. *With respect to Claims 1 and 22, the attorney argues that there is no disclosure of a watermark in Efron.* The “signature” represents an embedded watermark. The “signature” disclosed by Efron does not represent the traditional meaning of signature (see Efron, column 7,49-67, column 8, 1-6). However this signature is taken to comprise a multiplicity of test parameters, each parameter having limits within which comparable measurements of the unit under test must fall (see Efron, column 8: 7-19). The signature accounts for degradation of a parameter in the recording/playback process of a magnetic tape, a videodisc or a throughput device.

The attorney argues that Efron’s signature is different from the applicant’s watermark. The attorney states that watermarks may be used to provide protection of digital content such as audio and video files. This signature is stated as being stored on a video or audio medium (see Efron, column 7, lines 26-37) and can also be used for the purposes of copy protection since the quality of the audio/video medium is evaluated. This is because in copy protection, the quality of the signal stored is evaluated through the use of some kind of parameter such as a watermark or signature, thereby detecting a copied/deficient medium. This deficiency can be a deficiency in quality as determined by the watermark (signature). Hence this signature is used the same way the applicant uses his embedded watermark within his invention, and by measuring the deterioration of the signature (watermark) after the signal undergoes processing (such as

replication as described in Efron on column 7, lines 38-48) the degree of deterioration of the signal can be evaluated. In Efron, this process is used for various disc evaluation purposes based on the multiple parameters contained within the signature (column 8, lines 58-67).

Therefore, from the above reasons, the signature performs the functions of a watermark and at the same time provides redundancy to the signal because it does not change or affect the quality of the disc it is stored upon.

3. *With respect to Claim 13 and 23, the attorney's argument of the technique being one that analyzes an intrinsic frequency of the signal is not being considered because it is not contained in the claimed limitation. The argument that Efron does not relate to watermarking technology is not agreed upon by the examiner and has already been traversed above. The examiner agrees that the 102 rejection should have been a 103 rejection due to reasons of obviousness and hence the office action has been updated to reflect this change.*

4. *With respect to Claim 9 and 21, the attorney argues that Shimpuku does not disclose or remotely suggest any form of watermarking technology. Shimpuku might not explicitly disclose watermarking but he does form a basis for an analogous reference with respect to Efron. The reasons as to why Shimpuku is relevant will be discussed here.*

Efron discloses an automated product (such as video or audio media) testing procedure whereby the degradation of the signature embedded within a signal stored within the audio or video medium is measured. This is done by comparing the characteristics of the signature embedded within this medium before and after processing (such as replication of the medium)

(Efron, column 7, lines 45-48). However, Shimpuku discloses the relationship between signal to noise ratio and bit error rate of a storage medium such as an optical disc (see Shimpuku, Fig. 1) after the data stored on the optical disc undergoes a processing (such as reproduction/replication) (see Shimpuku, column 4, lines 27-67 and column 5, lines 1-3). When the optical disc undergoes processing, a certain level of degradation occurs. This can be measured in terms of signal to noise ratio and error rate (see Shimpuku, Fig. 2).

A major relationship between Efron and Shimpuku is this. Efron discloses the measurement and evaluation of degradation of the signal stored/embedded within the storage medium with respect to a signature comprising a multiplicity of test parameters (see Efron, column 8, lines 7-19). Shimpuku is related to this process due to the fact that one of such parameters is indeed the relationship between the signal to noise ratio and error rate (Shimpuku, Fig. 2) and is used for the same general process of evaluation of degradation of a signal stored/embedded within a storage medium, which in this reference is an optical disc. Hence this is the relationship between the S/R (signal to noise ratio) and BER (bit error rate) to the fragility profile in Shimpuku that the attorney questions. Notice on Shimpuku in Fig. 1 that this is in relation to an optical disc medium undergoing processing, after which the medium is evaluated as to how much degradation occurred by the relationship between the signal to noise ratio and error rate. Shimpuku's Fig. 2 is very closely similar to the applicant's Fig. 1(b), with the shape of both graphs and axes being very similar. Hence Efron in view of Shimpuku reads on the applicant's invention and is therefore unpatentable.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-8, 11-20, 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Efron et al (4,755,884).

With regards to Claim 1, Efron meets the limitation “embedding a watermark with a degree of redundancy into the signal to form a steganographic signal” on column 7, lines 57-66; and “measuring a deterioration of the embedded watermark in the steganographic signal after the steganographic signal undergoes the processing” on column 8, lines 20-57, column 7, lines 17-25; and “estimating the nature and/or the amount of the processing based on the measured deterioration” on column 15, lines 33-44. The above reasoning behind the rejection can be found above in the rebuttal to the attorney’s arguments.

The signature of the reference represents a watermark because of the reasons also set forth above; and it is stored within a signal that undergoes processing, after which the amount of processing is determined by the evaluation of the embedded signature. It would have been obvious to deduce from Efron’s disclosure that the signature is a type of watermark that forms a steganographic signal because the signature is stored within a signal that is stored within a storage medium, and is used for the same purpose as a watermark, such as the detection and

evaluation of deterioration of quality of a processed signal. Hence this can be applied in copy protection, whereby quality deterioration evaluation is necessary and very useful.

With respect to Claim 2, Efron meets the limitation "said estimating step estimates an intrinsic fragility of the watermark by analyzing characteristics of the steganographic signal" on column 8, lines 7-19, column 7, lines 17-25 and on column 9, lines 5-10.

With respect to Claim 3, Efron meets the limitation "controlling an output of the steganographic signal when the amount of the estimated processing exceeds a threshold level, or the nature of the estimated processing is of a specified type" on column 8, lines 58-68, column 9, lines 1-2.

With respect to Claim 4, Efron meets the limitation "the nature and/or the amount of the estimated processing indicates whether the steganographic signal has undergone unauthorized processing" on column 8, lines 67-68 and on column 9, lines 1-2.

With respect to Claim 5, Efron meets the limitation "a user acquires the steganographic signal after it undergoes the processing; and the nature and/or the amount of the estimated processing indicates whether the acquired steganographic signal closely matches the steganographic signal before it undergoes the processing" on column 9, lines 54-68 and on column 10, lines 1-2.

With respect to Claim 6, Efron meets the limitation “providing a message to the user indicating whether the acquired steganographic signal closely matches the steganographic signal before it underwent the processing” on column 10, lines 22-40. The message to the user is disclosed as the printed report in the reference.

With respect to Claim 7, Efron meets the limitation of multi-generational copying on column 7, lines 38-45.

With respect to Claim 8, Efron meets the limitation “the deterioration of the embedded watermark is measured in accordance with a fragility profile of the embedded watermark” on column 8, lines 7-19.

With respect to Claim 11, Efron meets the limitation “the steganographic signal further includes an embedded robust watermark that signals a receiver that the watermark with redundancy is present in the steganographic signal” on column 7, lines 57-66.

With respect to Claim 12, Efron meets the limitation “the steganographic signal comprises at least one of audio and video content” on column 9, lines 47-53.

With respect to Claim 13, Efron meets the limitation “analyzing an intrinsic fragility of the signal, which is a carrier of the watermark layer determining a fragility profile in response to said analyzing step” on column 8, lines 65-68 and column 9, lines 5-10; and “wherein the

fragility profile is a model or a function that relates a degradation measure of the watermark layer to a degradation measure of the signal that carries the watermark” on column 8, lines 58-68 and on column 9, lines 1-10. The fragility profile has already been discussed above in the rebuttal to the attorney’s argument for Claim 13.

With respect to Claim 14, Efron meets the limitation “subjecting the steganographic signal to at least one processing step” on column 9, lines 54-68, column 9, lines 1-2; and “wherein the fragility profile denotes a deterioration of the embedded watermark layer due to said at least one processing stage” on column 9, lines 54-68, column 9, lines 1-2.

With respect to Claim 15, Efron meets the limitation “the intrinsic fragility analysis is applied to a cover portion of the signal before the signal is degraded by at least one processing step to indicate whether or not the watermark layer will survive the processing step” on column 9, lines 5-10.

With respect to Claim 16, Efron meets the limitation “increasing a power of the watermark layer in the signal before the signal is degraded by the processing step if the intrinsic fragility analysis indicates that the watermark layer will not survive the processing step” on column 7, lines 11-16 and on column 8, lines 65-67.

With respect to Claim 17, Efron meets the limitation “the intrinsic fragility analysis is applied to a cover portion of the signal to suggest eventual modifications of a configuration a

watermarking system used to provide the watermark layer to ensure a survival of the watermark layer through a specified processing stage” on column 8, lines 58-68 and on column 9, lines 1-10.

With respect to Claim 18, Efron meets the limitation of “after the analyzing and determining steps, the signal, and data designating the fragility profile, are distributed to a decoder” on column 31, lines 49-53.

With respect to Claim 19, Efron meets the limitation “the data designating the fragility profile is carried in the signal” on column 9, lines 5-10.

With respect to Claim 20, Efron meets the limitation “the data designating the fragility profile is carried in the signal in another watermark layer” on column 10, lines 10-16.

With respect to Claim 22, Efron meets the limitation “means for embedding a watermark with a degree of redundancy into the signal to form a steganographic signal” on column 7, lines 57-66; and “means for measuring a deterioration of the embedded watermark in the steganographic signal after the steganographic signal undergoes the processing” on column 8, lines 20-57 and on column 7, lines 17-25; and “means for estimating the nature and/or the amount of the processing based on the measured deterioration” on column 15, lines 33-44.

With respect to Claim 23, its limitation is similar to Claim 13 limitation and hence its rejection can be found therein.

Claims 9 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Efron (4,755,884) in view of Shimpuku et al (5,432,799).

With respect to Claim 9, all the limitation is met by Efron except the limitation disclosed below.

The limitation “the fragility profile denotes a relationship between a bit error rate of the watermark and a signal to noise ratio of the steganographic signal” is met by Shimpuku et al in the abstract.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Shimpuku et al within the system of Efron so as to be able to modulate the signal.

With respect to Claim 21, all the limitation is met by Efron except the limitation disclosed below.

The limitation of “the fragility profile denotes a relationship between a bit error rate of the watermark layer and a signal to noise ratio of the signal after the watermark layer and the signal are degraded” is met by Shimpuku in the abstract.


It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Shimpuku et al within the system of Efron so as to be able to modulate the signal.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Efron (4,755,884) in view of Smith et al (5,945,932).

With respect to claim 10, all the limitation is met by Efron except the limitation disclosed below.

The limitation of "the watermark is embedded in the signal in accordance with a predicted sensitivity of the signal that is based on a psychoacoustic analysis thereof" is met by Smith et al in the abstract. The psychoacoustic analysis is represented by situation described of a code that has symbols formed from an impulse function having its energy within a specified frequency range, that is inaudible to human perception.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Smith et al within the system of Efron because the art of using the psychoacoustic analysis feature would enable a watermark embedded within an audio stream to be undetectable to the common user. Hence, this feature can be used to store authentication information or other forms of secret data that is to be kept unknown to the user.


KIM VU
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tracey Akpati whose telephone number is 703-305-7820. The examiner can normally be reached on 8.30am-6.00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kim Vu can be reached on 703-305-4393. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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